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Abstract

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Grant Number:	5R01NR004564-04
PI Name:	HARRELL, JOANNE S.
PI Title:	PROFESSOR
Project Title:	ENERGY EXPENDITURES OF PHYSICAL ACTIVITIES IN YOUTH

Abstract: *DESCRIPTION (Adapted from the Investigator's Abstract): The primary aim of the study is to determine the energy expenditure (in terms of oxygen uptake, caloric cost and metabolic equivalent [MET] levels) of activities commonly performed by children and adolescents. The energy expenditure of common individual and group activities will be measured in a large sample of youth aged 8 - 18 using indirect open circuit calorimetry. Research questions are: 1) What is the energy expenditure (in METs) for each of the activities examined by age and by gender? 2) Does the energy expenditure for the activities studied vary significantly by gender or by age? 3) Are the MET levels for the activities significantly different when the results are adjusted for obesity or pubertal level? If so, are these differences the same for boys and girls? 4) At what age do the MET levels for specific activities become similar to those of adults, as published in the adult Compendium of Physical Activities (Ainsworth et al., 1993)? A secondary aim is to determine the accuracy of a three dimensional accelerometer for estimating the energy expenditure of physical activities in children by comparing values of common activities measured by accelerometer with those found with simultaneous calorimetry. If validated, the accelerometer has great potential for use in future field and clinical trials. This project will consist of two related, descriptive studies involving different subjects. Study 1 will ascertain the energy expenditure of selected common individual activities of 264 children and adolescents, half boys and half girls, aged 8 - 18. It will be done at the Applied Physiology Laboratory at UNC-Chapel Hill. Study 2 will focus on group activities, to determine the energy expended by the same age youth during selected common team sports and other group activities (n = 1320). These data will be collected at sports camps or*

other sites where teams are playing; activities such as soccer, basketball and volleyball will be studied. Data will be compared to the adult Compendium to determine similarities and differences. The results will provide a more accurate way to quantify activity in youth, to examine the health benefits of increased activity and to determine the dose of activity needed to prevent obesity and other risk factors for future cardiovascular disease as well as making it possible to accurately study the activity of chronically ill children and adolescents.

Thesaurus Terms:
adolescence (12-18), age difference, bioenergetics, body physical activity, calorimetry, gender difference, middle childhood (6-11)
body composition, caloric dietary content, human puberty, obesity, pediatrics, play, recreation, respiratory function, social organization
clinical research, human subject

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